

Idea Creation Tools

Affinity Diagram

Also called: affinity chart, K-J method
Variation: thematic analysis

Description

The affinity diagram organizes a large number of ideas into their natural relationships. This method taps a team's creativity and intuition. It was created in the 1960s by Japanese anthropologist Jiro Kawakita.

When to Use

- When you are confronted with many facts or ideas in apparent chaos
- When issues seem too large and complex to grasp
- When group consensus is necessary

Typical situations are:

- After a brainstorming exercise
- When analyzing verbal data, such as survey results.

Procedure

Materials needed: sticky notes or cards, marking pens, large work surface (wall, table, or floor).

1. Record each idea with a marking pen on a separate sticky note or card. (During a brainstorming session, write directly onto sticky notes or cards if you suspect you will be following the brainstorm with an affinity diagram.) Randomly spread notes on a large work surface so all notes are visible to everyone. The entire team gathers around the notes and participates in the next steps.
2. It is very important that no one talk during this step. Look for ideas that seem to be related in some way. Place them side by side. Repeat until all notes are grouped. It's okay to have "loners" that don't seem to fit a group. It's all right to move a note someone else has already moved. If a note seems to belong in two groups, make a second note.
3. You can talk now. Participants can discuss the shape of the chart, any surprising patterns, and especially reasons for moving controversial notes. A few more changes may be made. When ideas are grouped, select a heading for each group. Look for a note in each grouping that captures the meaning of the group. Place it at the top of the group. If there is no such note, write one. Often it is useful to write or highlight this note in a different color.
4. Combine groups into "supergroups" if appropriate.

Example

The ZZ-400 manufacturing team used an affinity diagram to organize its list of potential performance indicators. Figure 1 shows the list team members brainstormed. Because the team works a shift schedule and members could not meet to do the affinity diagram together, they modified the procedure.

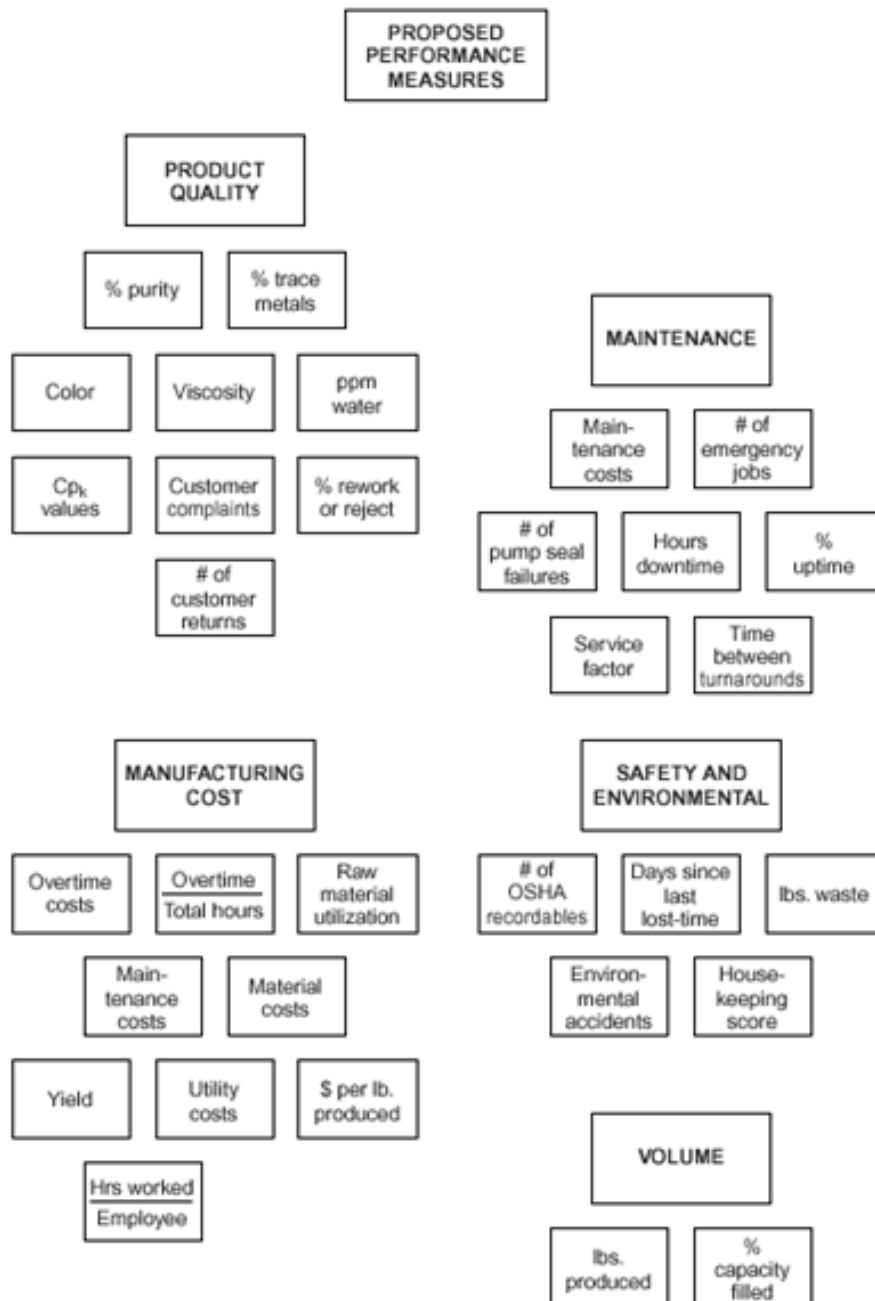
Figure 1 Brainstorming for affinity diagram example

Possible Performance Measures	
% purity	# of OSHA recordables
% trace metals	# of customer returns
Maintenance costs	Customer complaints
# of emergency jobs	Overtime/total hours worked
lbs. produced	\$/lb. produced
Environmental accidents	Raw material utilization
Material costs	Yield
Overtime costs	Utility cost
# of pump seal failures	ppm water
Viscosity	Color
Cp _k values	Service factor
Safety	Time between turnarounds
Days since last lost-time	Hours worked/employee
% rework or reject	lbs. waste
Hours downtime	Housekeeping score
% uptime	% capacity filled

They wrote each idea on a sticky note and put all the notes randomly on a rarely used door. Over several days, everyone reviewed the notes in their spare time and moved the notes into related groups. Some people reviewed the evolving pattern several times. After a few days, the natural grouping shown in figure 2 had emerged.

Notice that one of the notes, "Safety," has become part of the heading for its group. The rest of the headings were added after the grouping emerged. Five broad areas of performance were identified: product quality, equipment maintenance, manufacturing cost, production volume, and safety and environmental.

Figure 2 Affinity diagram example



Considerations

- The affinity diagram process lets a group move beyond its habitual thinking and preconceived categories. This technique accesses the great knowledge and understanding residing untapped in our intuition.
- Very important "Do not's": Do not place the notes in any order. Do not determine categories or headings in advance. Do not talk during step 2. (This is hard for some people!)
- Allow plenty of time for step 2. You can, for example, post the randomly-arranged notes in a public place and allow grouping to happen over several days.

- Most groups that use this technique are amazed at how powerful and valuable a tool it is. Try it once with an open mind and you'll be another convert.
- Use markers. With regular pens, it is hard to read ideas from any distance.

Excerpted from Nancy R. Tague's [The Quality Toolbox](#), Second Edition, ASQ Quality Press, 2004, pages 96-99.